

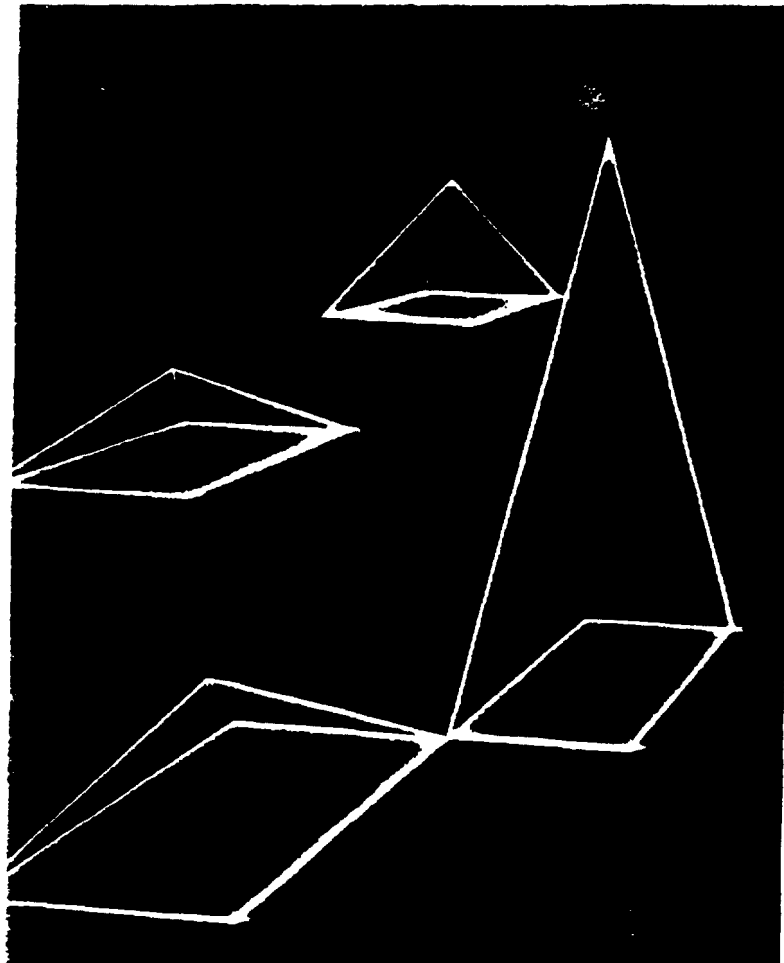
# MicroFill™

Structure Specific Coverage

Decibel  
Multi  
Media  
Microcell  
Systems

T E C H N O L O G I E S M E E T

W H E R E C O M M U N I C A T I O N



## **Improve In-Building Coverage And Add Cellular Subscribers.**

Anyone who uses hand-held cellular phones understands the frustration of dropped calls and poor or scratchy voice quality. Equally annoying is the inability to make calls inside buildings, subway stations, pedestrian tunnels and other covered structures—particularly when these are often the very places from which calls need to be made.

Fortunately, there's a solution: MicroFill from Decibel Products, an RF distribution system specifically designed to provide basic service or microcellular coverage inside buildings, tunnels and other such structures.

### **Provide Clean, Clear Signals With Reduced Interference.**

Currently, cellular coverage inside buildings and other structures is provided by radiating a signal from a nearby cell site that is strong enough to penetrate exterior walls and saturate the interior. Unfortunately, this power approach to in-building coverage often causes interference to other calls in the network. Such interference occurs because direct and reflected RF signals from the high-power site reduce the signal-to-interference ratio in cells which use the same frequencies. As a result, system capacity is limited and call quality lowered.

MicroFill, on the other hand, is designed to counter co-channel interference, thereby allowing system operators to provide the higher quality

of service today's cellular customers demand. MicroFill uses state-of-the-art amplifiers, 75 ohm coaxial cable and specially designed antennas to distribute precisely controlled RF signals throughout the desired area. The result is clear, clean communications with little or no interference to co-channel cells.

### **Cost Savings As Much As 75% With No Performance Loss.**

The MicroFill system uses a 75 ohm coaxial cable distribution system. In many buildings, 75 ohm cables have been pre-installed for use with CATV and LANs. With 75 ohm cable, a cost savings of up to 75 percent over current 50 ohm cables of equal electrical specifications is possible. Since the amplifiers and the antennas are designed for 75 ohm impedance, no electrical performance is sacrificed.

By utilizing a distributed gain/radiation system, only the required amount of signal is radiated at various locations inside a structure to provide coverage. Buildings with no coverage can be provided with cellular service easily and cost effectively. Buildings already served by high-powered sites can continue to be served while power and interference are reduced.

In high-use environments, such as downtown office buildings, network capacity can be increased by "off loading" in-building users to a MicroFill system served by a dedicated cell. In conjunction with

Decibel's MicroLite™ Fiber Optic Microcell System, the dedicated cell can serve several buildings.

### MicroFill Handles TDMA, CDMA And Narrow Band As Well As Analog.

The MicroFill system is designed to be transparent to the cell site. This ensures that the investment in Decibel equipment will continue to perform even if you change MTSO or base station suppliers. High linearity throughout the system ensures compatibility with TDMA, CDMA and N-AMPS as well as analog systems. This linear design supports both today's analog systems and tomorrow's digital modulation scheme.

### MicroFill Installs Easily and Economically At Many Convenient Locations.

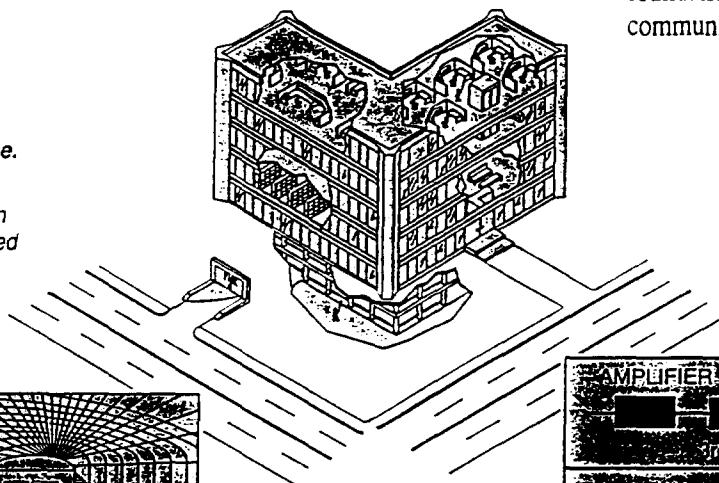
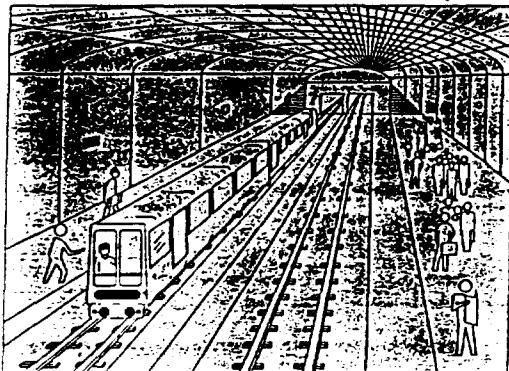
MicroFill's 75 ohm cables are designed for in-building distribution and are therefore easy to install. DC power is supplied to the in-line amplifiers through the coaxial cable. This further reduces the cost of installation, since in most cases an electrician is not required. The power source supplying the amplifiers is placed in an equipment closet and plugged into a standard electrical outlet. Uplink and downlink directional couplers provide easy setup and maintenance, as well as monitoring points in the system.

Omni and directional antennas are available to equalize coverage and signal strength. The antenna radomes are designed to be as inconspicuous as possible, looking no more objectionable than a smoke detector.

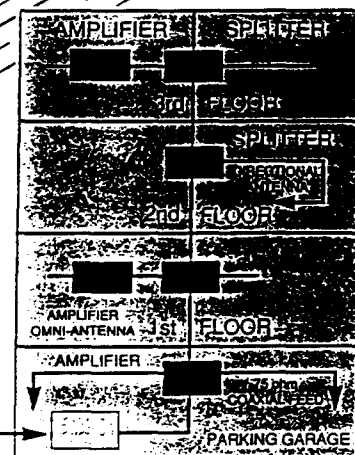
MicroFill is a member of Decibel Products' Multi Media Microcell Systems family. It is designed to work with other products including MicroLite, a fiber optic microcell system, the 16-Channel DB4416 Power Combiner, PrismPlus repeaters and a selection of specialized low-profile interior and exterior antennas. Together, these products provide cellular system engineers with the tools to meet the challenges of today's subscribers while building the foundation for future personal communications networks.

### Specialized Coverage.

MicroFill, Decibel's 75 ohm RF distribution system, offers improved portable coverage and PCN-type service to buildings, tunnels, parking garages, etc.



Input from Cell Site, MicroLite, or PrismPlus.

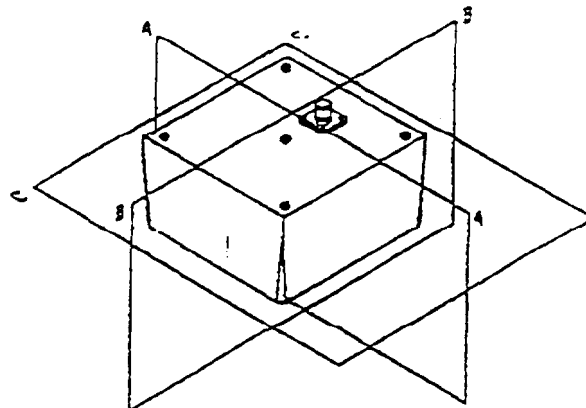
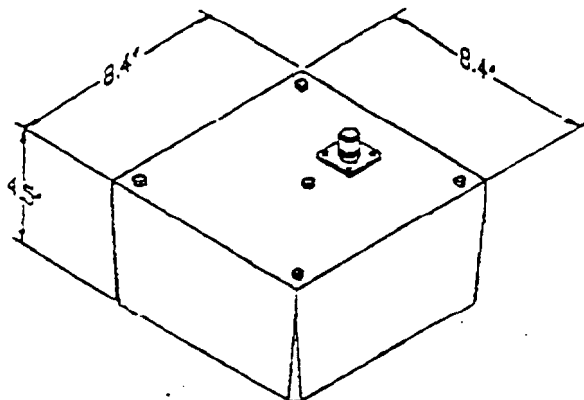


# DECIBEL PRODUCTS

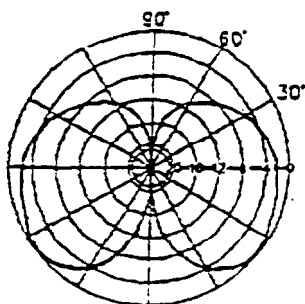
## Micro Fill Indoor Antenna

DB781S50N-C, DB781S75F-C

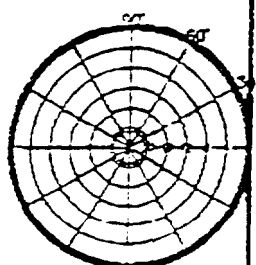
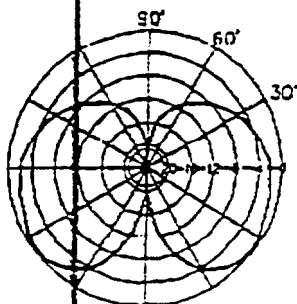
Model Number	DB781S50N-C	DB781S75F-C
Impedance	50 ohms	75 ohms
Termination	Type N-Female	Type F-Female
Frequency Range	824-894 MHz	
Gain	1.0 dBi or 3.1 dBi	
VSWR	≤1.5:1	
Pattern Characteristic	"Butterfly" pattern with freespace null directly below antenna	
Polarization	Perpendicular to C-C plane	
Max. Input Power	50 Watts	
Other Information	Application: Indoor Tx/Rx	
Weight	1.7 lbs	
Material	Back Panel: Radiating Elements: Radome:	Brass Brass ABS Plastic
Color	Off-White	
Mounting	Four mounting holes in backplate.	
Packing Size	12" x 12" x 12"	
Shipping Weight	2.7 lbs	



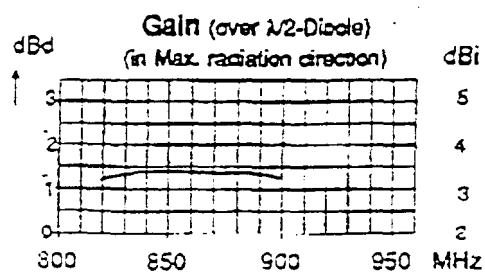
Plane A-A



Plane B-B



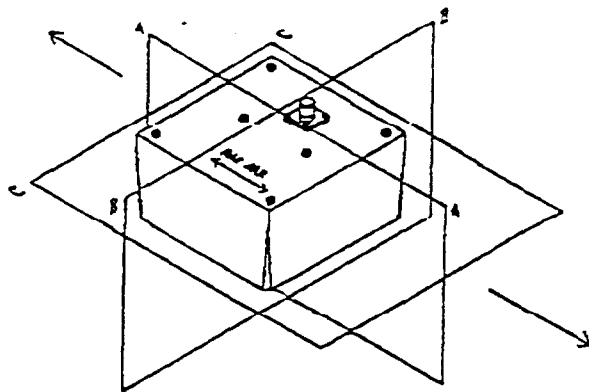
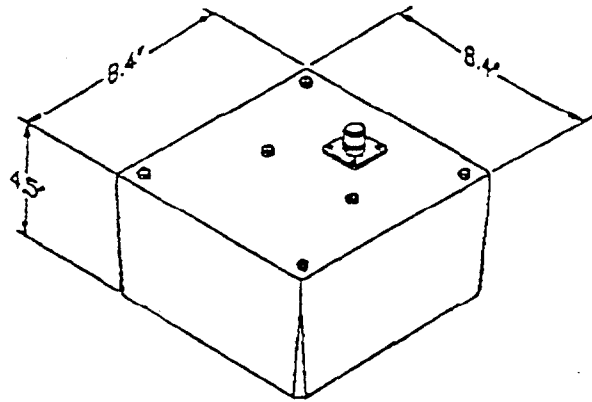
Plane C-C



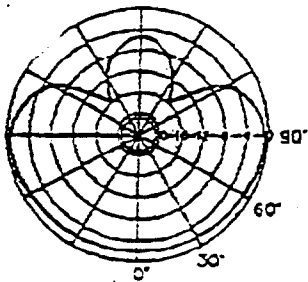
# DECIBEL PRODUCTS

## Micro Fill Indoor Antenna DB781D50N-C, DB781D75F-C

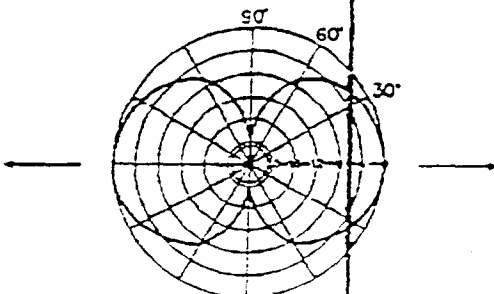
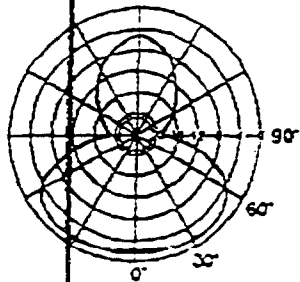
Model Number	DB781D50N-C	DB781D75F-C
Impedance	50 ohms	75 ohms
Termination	Type N-Female	Type F-Female
Frequency Range	824-894 MHz	
Gain	> 4.0 dBi or > 6.1 dBi Max in A-A and C-C plane	
VSWR	<1.5:1	
Beamwidth (3 dB from max)	225° N.A. N.A.	A-A plane B-B plane C-C plane
Polarization	Perpendicular to C-C plane	
Max. Input Power	50 Watts	
Other Information	Application: Indoor TV/Rx	
Weight	2.2 lbs	
Material	Back Panel: Radiating Elements: Radome:	Brass Brass ABS Plastic
Color	Off-White	
Mounting	Four mounting holes in backplate.	
Packing Size	12" x 12" x 12"	
Shipping Weight	3.2 lbs	



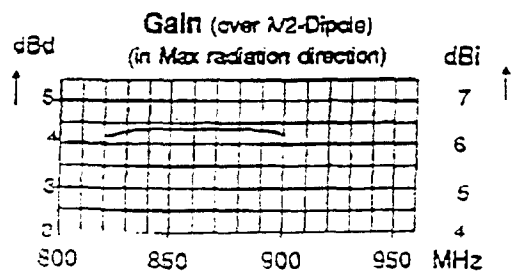
Plane A-A



Plane B-B



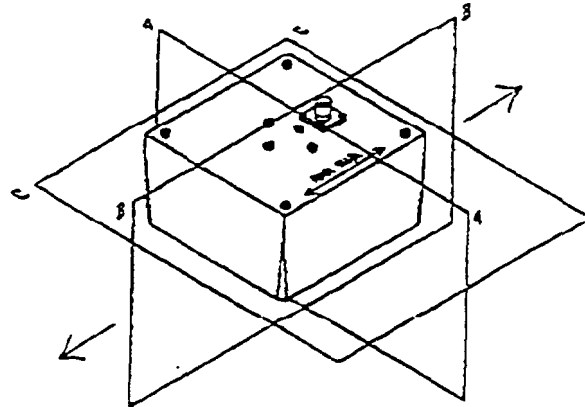
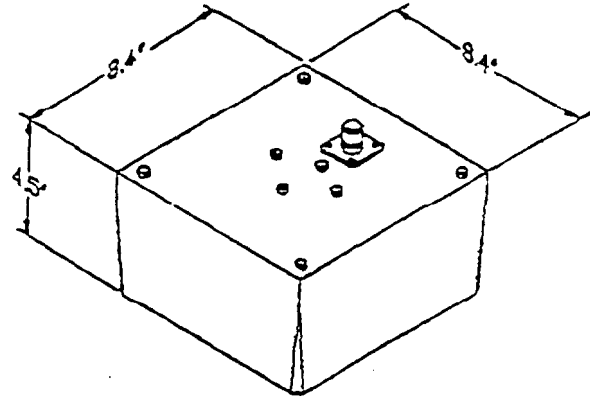
Plane C-C



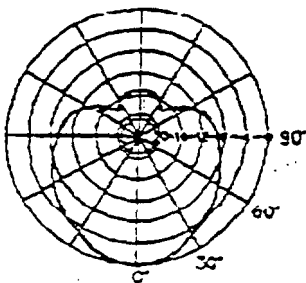
# DECIBEL PRODUCTS

## Micro Fill Indoor Antenna DB781LP50N-C, DB781LP50F-C

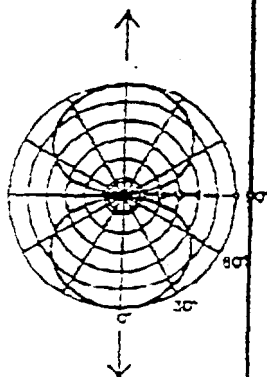
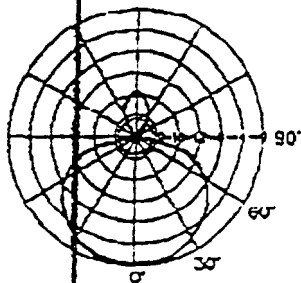
Model Number	DB781LP50N-C	DB781LP50F-C
Impedance	50 ohms	75 ohms
Termination	Type N-Female	Type F-Female
Frequency Range	824-894 MHz	
Gain	> 6.5 dBd or > 8.6 dBi	
VSWR	≤ 1.5:1	
Beamwidth (3 dB from max)	70° 90° 85°	A-A plane B-B plane C-C plane
Polarization	Perpendicular to O-O plane	
Max. Input Power	50 Watts	
Other Information	Application: Indoor Tx/Rx >10 dB F/B ratio	
Weight	1.7 lbs	
Material	Back Panel: Radiating Elements: Radome:	Brass Brass ABS Plastic
Color	Off-White	
Mounting	Four mounting holes in backplate.	
Packing Size	12" x 12" x 12"	
Shipping Weight	2.7 lbs	



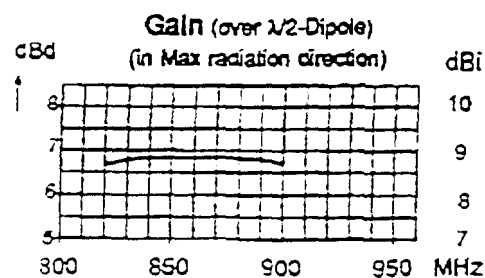
Plane B-B



Plane A-A



Plane C-C

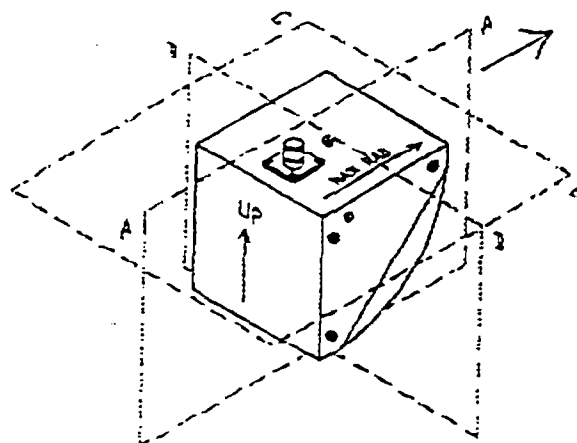
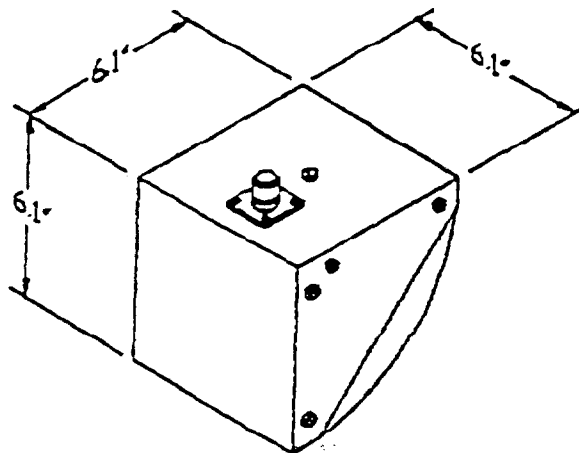


# DECIBEL PRODUCTS

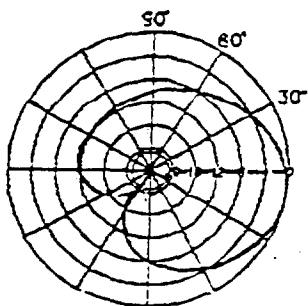
## Micro Fill Indoor Antenna

DB791S50N-C, DB791S75F-C

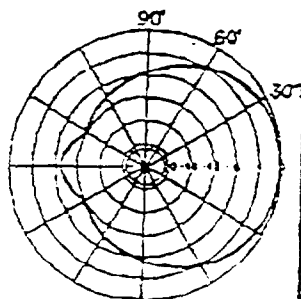
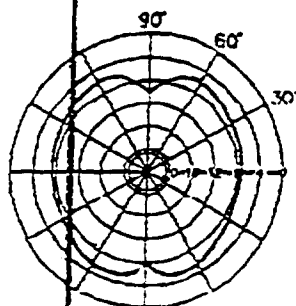
Model Number	DB791S50N-C	DB791S75F-C
Impedance	60 ohms	75 ohms
Termination	Type N-Female	Type F-Female
Frequency Range	624-894 MHz	
Gain	>6.0 dBd or >8.1 dBi	
VSWR	<1.5:1	
Beamwidth (3 dB from max)	80° 120° 105°	A-A Plane B-B Plane C-C Plane
Polarization	Perpendicular to C-C plane	
Max. Input Power	50 Watts	
Other Information	Application: Indoor Corner Tx/Rx with > 10 dB Front to Back Ratio	
Weight	1.4 lbs	
Material	Back Panel: Radiating Elements: Radome:	Brass Brass ABS Plastic
Color	Off-White	
Mounting	Four mounting holes in backplate.	
Packing Size	12" x 12" x 12"	
Shipping Weight	2.4 lbs	



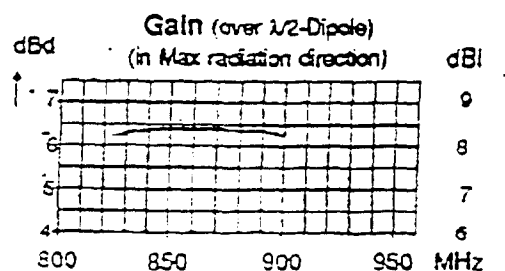
Plane A-A



Plane B-B

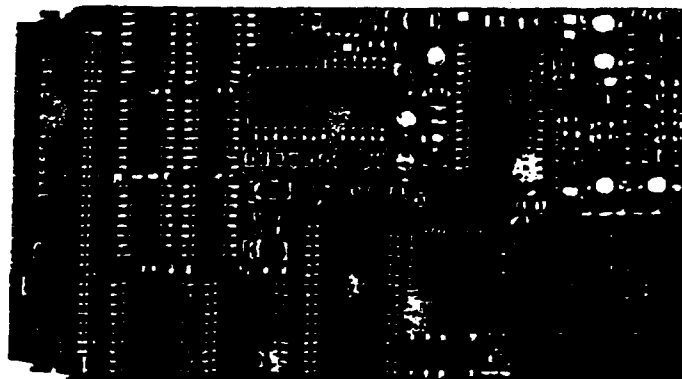


Plane C-C



## Exhibit B

## PCMCIA "Pager Card" Prototype (Forerunner of PCMCIA Transceiver Card)



### Physical Characteristics

Card Type:	PCMCIA Type II
Interface:	PCMCIA Memory Card or I/O
Antenna:	<ul style="list-style-type: none"><li>• Flush mount (battery could be incorporated into external handle; AAA preferred, AA probably too large)</li><li>• Some manufacturers may require custom design and location.</li><li>• Contact platform manufacturers on EMI and RFE compatibility. This is consistent with other PCMCIA card product manufacturers.</li></ul>
Switch:	Power On-Off
Indicator:	<p>Blinking LED</p> <ul style="list-style-type: none"><li>• Message waiting indicator</li><li>• Low battery indicator when voltage drops to design unit</li></ul>
Display:	None
Label:	PCMCIA STU release/paragraph 3.1.7 label



# PCMCIA "Pager Card" Prototype

## (Continued)

### Power Source

- Battery:
- 700 hours out of portable (350 hours lower limit)
  - Internal see PCMCIA STD release 1.0 paragraph 3.1.6 battery location
  - Consider re-chargeable options when card is inserted in platform
  - Use portable power source when card is inserted in PCMCIA slot
  - Insert and remove with portable power active

### Product Features

Data Rate: 2,400 BPS; product evolution should anticipate upgrade to 4,800 or 9,600 BPS as 2nd generation product

Format: POCSAG (2400 BPS)

Address: Minimum of 4 POCSAG addresses. Minimum of 16 addresses including the 2 POCSAG function bits.

Memory: 32K bytes minimum

Internal Clock: Time and date stamp of all received messages or last packet received.

Electrical Requirements/  
RF Requirements Commensurate with Motorola Bravo pager  
Commensurate with Motorola Bravo pager

### Portable Unit (PCMCIA Card Driver Software)

Display Features: PCMCIA pager card should rely on software in the portable unit to manage the information in RAM

- Message waiting indicator
- Number of messages, type of message, time and date stamp of message arrival
- Low battery indicator for PCMCIA card when voltage not within operational limit
- Battery charging indicator (min./max.)
- PCMCIA card in-range indicator

## PCMCIA Transceiver Card

**Receiver:** See PCMCIA receiver card

**Transmitter:**

**Power Out:** 100 mw to 500 mw

**Frequency:** 930 MHz

**Modulation:** Constant Amplitude

**Bandwidth:** FCC masking specification  
for 25 kHz bandwidth

## U. S. Portable Computer Installed Base

	1985	1990	1995
Laptop	396 K	3859K	12,072K
Notebook		169K	6122K
Pen-based		9K	6110K
Handheld		94K	11,462K
Total	396 K	5537K	37,229K
% Growth		1300%	570%

Source: DATAQUEST, 1991

## Summary Biographical Information -- Roger D. Linquist

### PageMart, Inc.

#### **CEO, PageMart, Inc. 1989-Present**

- *Paging Business*
  - Founder of PageMart
  - Direct Broadcast Satellite (DBS) Control of paging transmitters (pioneering DBS system in Dallas/Ft. Worth, February 1990)

### PacTel Personal Communications

#### **CEO, PacTel Personal Communications, 1986-1989**

- *Cellular Business (largest U.S. subscriber base)*
  - 100% or controlling interest: Los Angeles, San Diego, Sacramento, Atlanta, Detroit
  - Active minority interest (system management): San Francisco/San Jose
  - Passive minority interest: Dallas/Ft. Worth
- *Paging Business (Third largest)*
- *Automatic Vehicle Location*

### Communications Industries

#### **CEO (V. P., COO), Communications Industries, 1982-86**

- *Paging Business (Third largest)*
- *Cellular Business*
  - Founding Director of Cellular Telecommunications Industry Association (CTIA)
  - 100% interest: Atlanta and San Diego
  - Minority interest: San Francisco/San Jose and Dallas/Ft. Worth
- *Manufacturing Business*
  - Paging switch manufacturer (BBL)
  - Mobile Communications Components Manufacturer (Decibel Products)

### McKinsey & Co., Inc. (Management Consultants)

#### **Management Consultant, McKinsey & Co., Inc., 1976-82**

- *Telecommunications Business Practice*
- *Computer and Computer Peripheral Business Practice*
- *Space Systems Technology Businesses*

### Texas Instruments

#### **Department Manager, Video Systems and Calculator Products, 1974-1976**

- *Consumer Products Division*
  - Video Systems Program (all electronic CCD camera)
  - Business calculator products

#### **Branch Manager, Systems & Information Sciences, 1971-74**

- *Central Research Laboratory*
  - Interactive Cable TV System Program (hardware and software development)
  - Advanced RF Receiver Technology (all solid state VHF/UHF TV Turner)

### EDUCATION

Northwestern University	-- MBA
Purdue University	-- MSME
Purdue University	-- BSME

## Summary Biographical Information -- Malcolm Lorang

### PageMart, Inc.

#### **V. P. Engineering, PageMart, 1989-Present**

- Advanced wireless system and equipment design

### International Teletrac Systems

#### **Corporate Scientist, International Teletrac Systems, 1988-89**

- Corporate Systems/Architect Engineer
- Liaison to AVM manufacturers and AVM Product/Architect Engineer

### Texas Instruments

#### **Member of Technical Staff, Texas Instruments, 1972-1988**

- **Government Products Group:** Member of Technical Staff - Systems Engineer
- **Semiconductor Group:** System design for next generation Telco product IC's
- **Corporate Lab/Corporate Engineering Center:** Architect/Systems and Circuit Engineer of Bernouille disk product, facilities computer communications network product, video coding products and rf systems design.

### Magnavox Research Labs

#### **Senior Engineer, Magnavox Research Labs, 1957-1972**

- System Architect and Engineer on Specialized communications systems, primarily on Spread Spectrum Communications Systems.

### FORMAL EDUCATION

West Coast University -- MS, Operation Research  
-- MS, System Engineering  
-- MS, Management Science  
Pacific State University -- BSEE

## References

### References from M-Tel Comments

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      Mobile Communications Engineering  
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      1982
- MT5    W.C.Y. Lee  
      Mobile Communications Design Fundamentals  
      Howard W. Sams & Co.,  
      1986
- MT7    W. C. Y. Lee  
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- 2)    W.C.Y. Lee, Patent Number 5,067,147; Nov. 7, 1989  
      Microcell System For Cellular Telephone System
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      Cellular Mobile Radiotelephone System  
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- 6)    Kenneth Bullington  
      Radio Propagation for Vehicular Communications  
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- 7)    Neal H. Shepherd, Radio Wave Loss Deviation and Shadow Loss at 900 MHz IEEE  
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- 8)    "Methods and statistics for estimating field strength values in the land mobile services  
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- 11) D. C. Cox, R. R. Murray, and A. W. Norris, "Measurements of 800 MHz radio transmission into buildings with metallic walls." *Bell Sys Techn. J.*, vol. 62, pp. 2695-2718, 1983.
- 12) E. H. Walker, "Penetration of radio signals into buildings in the cellular radio environment." *Bell Syst Tech. J.*, vol. 62, no. 9, PP. 2719-2734, 1984.
- 13) D. C. Cox, R. R. Murray, and A. W. Norris, "800 MHz attenuation measured in and around suburban houses." *Bell Labs. Techn. J.*, vol. 63, pp. 921-954, 1986.
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- 15) J. Horikoshi, K. Tanaka, and T. Morinaga, "1.2 GHz band wave propagation measurements in concrete buildings for indoor radio communications," *IEEE Trans. Veh. Technol*, vol. VT-35, pp. 146-152, 1986.
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- 18) Walker, E. H., "Penetration of Radio Signals into Building in the Cellular Radio Environment." *Bell System Technical Journal* 62: Pt. I (Nov. 1983): 2719-2734.
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- 20) William Stallings, *Handbook of Computer Communications Standards*, vol. 1 A Stallings/MacMillan Book. pp. 79-81.
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- 27) M. Ramadam, "Practical Considerations in the Design of Minimum - Bandwidth, 90 mb 8-PSK Digital Microwave Systems" *Proc. IEEE International Conf. on Comm.*, June 1976, pp. 29-1 to 29-6.

EXHIBIT C

MOTOROLA, INC. LETTER TO PAGEMART REGARDING  
PIMS TECHNICAL FEASIBILITY





**MOTOROLA INC.**

July 13, 1992

Mr. Roger D. Linquist, Chairman  
 PageMart, Inc.  
 6688 North Central Expressway  
 Suite 900  
 Dallas, Texas 75206

Subject: Personal Information Messaging Service (PIMS)

Dear Mr. Linquist:

We have had an opportunity to review the PIMS system design and have concluded that Motorola could develop and manufacture both the network equipment and the subscriber receiver/transmitter unit using a combination of existing and emerging technologies. The system elements utilized in the design would require a base station unit containing multiple transmitters for the forward link; a base station unit containing multiple receivers for the return link; a trunking control unit; and a subscriber unit containing a receiver and transmitter. All of the network equipment technology is essentially available today; however, additional development will be necessary to ensure against receiver desensitization, in harsh RF site locations. The subscriber receiver/transmitter unit will require further development if it is to use the PCMCIA card package. We believe such a "pager card" to be feasible.

Network controlled frequency agility

Our current Synthesized Bravo Plus pager can switch frequencies in response to over the air commands from the paging terminal. Your proposed subscriber unit might require additional functionality which will be extensions of the technology.

Return Link transmitter

Achieving the required transmitter performance using pager battery systems and pager antennas represents a substantial technological challenge. The subscriber unit design may be simplified if the pager card has access to the host portable computer battery power in order to have a sustained transmit capability even at the hundred milliwatt level. The "pager card" will probably need an external attachment to the PCMCIA card package in order to accommodate a more efficient antenna.

Enhanced Digital Modulation

The high speed coding techniques available to achieve 4.800 bps or ERMES data rate of 6.250 bps are achievable and suitable to the subscriber transceiver unit. Various pager manufacturers are currently developing ERMES supporting technology.

In summary, we believe that a "pager card" can be developed to meet requirements with reasonable cost and size assuming transmitter power can be sourced from the host portable computer, and a more efficient, external antenna is used. We look forward to continuing the development of your proposal.

Regards,

A handwritten signature in cursive script, reading "Fernando Gomez".

Fernando Gomez  
Director, Paging Products Operation  
Motorola, Inc.

c: Jerry Leonard

EXHIBIT D

REPORT OF SFA, INC. ON PIMS FEASIBILITY



CORPORATE OFFICE

1401 McCORMICK DRIVE ■ LANDOVER, MARYLAND 20785  
(301) 925-9400 ■ FAX (301) 925-8612

October 5, 1992

Mr. Roger Linquist  
President  
PageMart, Incorporated  
6688 N. Central Expressway  
Suite 900  
Dallas, TX 75206

Dear Mr. Linquist:

SFA, Inc. is pleased to submit its report on the feasibility study of the Personal Information Messaging Service (PIMS) proposed by PageMart to the FCC in its Petition of Rulemaking in February 1992.

We welcome the opportunity to answer any questions you may have about this study, or to provide you with additional information on our analysis.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read "Donald Nowak".

Donald Nowak  
Manager  
Telecommunications Division

DN/jj

Enclosure

## **PIMS FEASIBILITY STUDY**

Prepared for PageMart, Inc. on its  
Personal Information Managing Service (PIMS)  
Proposed to the Federal Communications Commission  
in its February 1992 Petition for Rulemaking.

### **Prepared By:**

Ernest R. Freeman  
J. Robert Bounds  
Mirza M. Ahmad  
Katherine Y. Ernhart

SFA, Inc.  
1401 McCormick Drive  
Landover, MD 20785

### SFA's Background

SFA, Inc. was founded in 1969 to provide engineering, scientific and technical services to government and industry. As a result of SFA's proven capability for providing low-cost, high-quality research, engineering and manufacturing support, the company has achieved a ten-fold increase in sales and staffing in less than 10 years. Twice in recent years we have made *Inc. Magazine's* honor roll of America's 500 fastest-growing, privately-held companies. We now maintain a full-time staff of more than 400 employees.

Today, SFA's Telecommunications Division is backed by a fully equipped radio/microwave test laboratory including an independently operated 38,000 square foot manufacturing facility. Our manufacturing capability allows prototype and limited production implementation of both mechanical and electrical assemblies and sub-assemblies.

SFA's long experience with telecommunications technology gives us an insight into new developments in the industry before these developments become widely established. We are able to forecast and meet our clients' requirements efficiently and effectively. As an example, SFA tracks developments in areas such as slow-scan television radio transmission, and is even performing research into the application of artificial neural networks to communication.

# FEASIBILITY OF PAGEMART'S PIMS PROPOSAL

## EXECUTIVE SUMMARY

SFA has analyzed PageMart's proposed Personal Information Messaging Service (PIMS) to determine whether PIMS is technically feasible. Each major design issue was evaluated, including frequency reuse, system coverage, interference, signalling protocol, system capacity, and use of current technologies. Based on this review, SFA concludes that PIMS is a technically and commercially feasible system offering advanced data communications capabilities. SFA has also determined that there are no technical design issues in the proposal for which empirical implementation solutions do not already exist in engineering literature or in real-world communication experience. The fundamental design of PIMS is sound and workable as proposed in the Technical Appendix to PageMart's February 1992 Petition for Rulemaking and March 1992 Pioneers Preference Request.

In an innovative and creative manner the PIMS design selectively exploits certain features of Cellular, SMR, trunking, POCSAG paging, mobile satellite technology, packet switching, simulcasting, radio location, data communications and micro/pico cell concepts to achieve high throughput in a two-way data transmission system.

PIMS system can be described as a combination of several existing (e.g., cellular, paging) and emerging (e.g., micro/pico cell, mobile satellite) technologies, blended to create an advanced messaging service resulting in major performance improvements in system throughput. None of the technologies proposed by PIMS, whether existing or emerging require any verification in themselves since these technologies are now well known through real-world experience. Even those technologies proposed in PIMS which may be classified as "emerging" are now well beyond the testing stage and are being rapidly employed.

This report is organized into four sections as follows:

- Section I:        System Overview
- Section II:      Technical Discussion
- Section III:     System Architecture and Technology
- Section IV:      Conclusion

After reviewing PageMart's PIMS proposal with respect to existing technical literature, published empirical data and wireless communications industry experience together with SFA's accumulated technical data, we have determined that PIMS is not only technically feasible, but is an important system development in wireless, non-interactive communications. The following technical feasibility conclusions were reached on key aspects of the PIMS system:

- PageMart's PIMS proposal based on a 4 cell reuse is not only feasible, but desirable;
- PIMS' return link is fully functional in and out of buildings;
- PIMS' return link and forward link is approximately balanced resulting in fewer than two receiver sites per transmit site;
- Adjacent channel interference is the return link is controllable through conventional engineering design practices;
- The polling channel can readily support PIMS subscriber capacity estimates;
- The return link capacity is effectively matched to the forward polling link;
- PageMart's PIMS system capacity estimates are conservative;
- PIMS system capacity will proportionally increase as improvements in hardware/software are made;
- PageMart's "cellular" approach to PIMS is different than cellular telephone; and
- The technical feasibility of PIMS is confirmed by its use of existing commercial technology.



## SECTION I SYSTEM OVERVIEW

PIMS is a high capacity data transmission system ideally suited for professionals, white collar workers, and consumers en mass requiring longer messages than currently available in conventional paging. PIMS distinguishes itself from other systems by offering high system throughput, radiolocation, low cost, open protocol, device independence, and mass appeal with virtually unlimited growth potential in the number of subscribers.

A complete PIMS network and its operation can be described as follows ( a more detailed discussion is contained in Section II and III). The basic elements of PIMS are shown in Figures 1 through 5.

1. The data transmitting party (a computer terminal, fax machine or other device) transmits the message to the system controller on the landline network (PSTN) by dialing the appropriate telephone number of the system controller. The system controller has multiple incoming telephone ports capable of receiving digital information. This first step requires no further analysis or explanation, as this is a very common method of data transmission.
2. The system controller which receives the data is basically a high speed computer, programmed to control the network traffic. The system controller consists of a CPU, storage devices, and input and output ports. System controllers can be designed and programmed to perform a vast number of functions and are commonly used in hundreds of network applications around the world.
3. After receiving the message, the controller processes the message according to the address and routing information used with the message. Using the address and routing information, the controller attempts to contact the subscriber unit via a satellite Ku-band uplink/downlink. The area cell transmitters are equipped to receive the routing information via a Ku-band receiver.
4. Upon receiving the routing information the area cell transmitters ring the intended receiver on the polling channel using simulcast broadcast. The number of cell transmitter(s) involved in the simulcast transmission depend on whether the message is local, regional or nationwide. This information can be added to the subscriber unit address. The two extreme cases of a polling channel broadcast are as large as nationwide or as local as a single micro cell transmitter inside a building. Each cell transmitter involved in the simulcast broadcast transmits its own unique transmitter identification (TXID) during the broadcast.